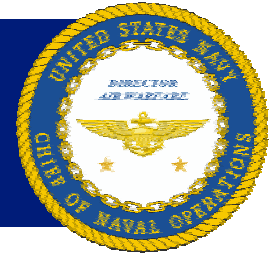# Broad Area Maritime Surveillance (BAMS) Unmanned Aerial Vehicle (UAV)

Program Overview

(9 Sep 02)

LCDR Brent Klavon- OPNAV BAMS UAV Requirements Officer

NAVY UAV Roadmap

- **Long-dwell Standoff ISR**
  - Broad Area Maritime Surveillance UAV (BAMS)

- **Penetrating Surveillance/SEAD/Strike**
  - Unmanned Combat Air Vehicle (UCAV-N)

- **Tactical Surveillance and Targeting**
  - Three Tiers from Battalion level asset to Battle Group/Amphibious Ready Group level asset

Tactical Control System (TCS)
- Command, Control and Direct Receipt of Data
- Family of UAVs

Broad Area Maritime Surveillance (BAMS) UAV

Persistent maritime/land ISR capability

– Long dwell, high altitude

– Operates in altitude or stand-off sanctuary

– Forward basing

– Unarmed

– Data direct to war fighter, maintain reach back

Direct sensor data to CVN through CDL

– Via satellite Ka-band BLOS

– Link 16 to deliver data to strike/tactical platforms

– Airborne Communication Relay Capability

Battlegroup Support

– Maritime / Littoral Battlespace Management

– Strike support: Precise target geo-location, BHA / BDA

– CVBG / ARG tailored Signals Intelligence (SIGINT)
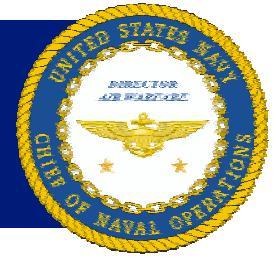
Sensors

– Inverse / Synthetic Aperture Radar

– Ground / Maritime / Air Mobile Target Indicator

– Electro-Optical / IR Wide Area Search

– SIGINT
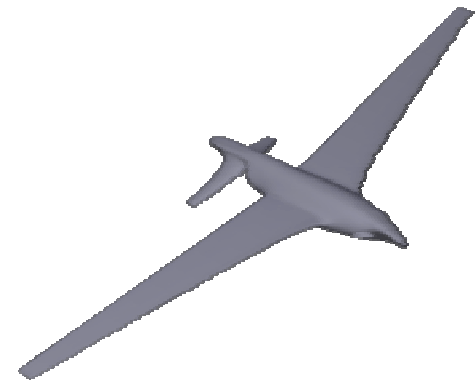
•Common

BAMS UAV
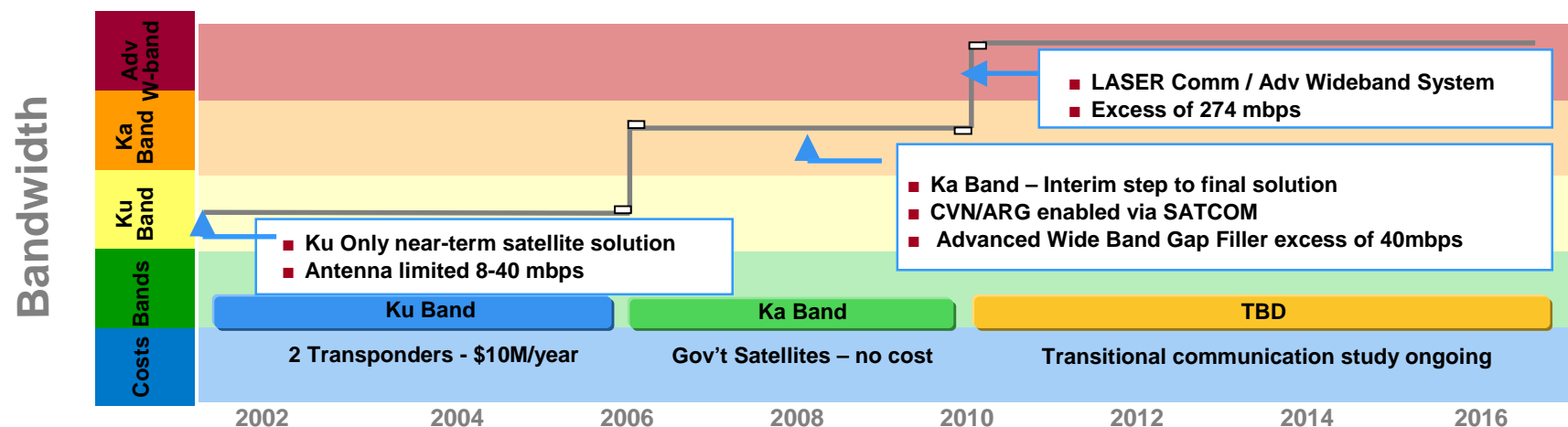## Command and Control

Command

Operational Control

- Numbered Fleet Commander in AOR
- May delegate to Commander, Fleet, Area Maritime Reconnaissance Surveillance Force

Tactical Control

- Battlegroup / ARG Commander in AOR
- Commander, Fleet, Area Maritime Reconnaissance Surveillance Force when Battlegroup / ARG not in AOR

Control

Bandwidth

Bands: Adv W-band | Ka Band | Ku Band | Bands | Costs

- LASER Comm / Adv Wideband System
- Excess of 274 mbps

- Ka Band – Interim step to final solution
- CVN/ARG enabled via SATCOM
- Advanced Wide Band Gap Filler excess of 40mbps

- Ku Only near-term satellite solution
- Antenna limited 8-40 mbps

Ku Band	Ka Band	TBD
2 Transponders - $10M/year	Gov't Satellites – no cost	Transitional communication study ongoing

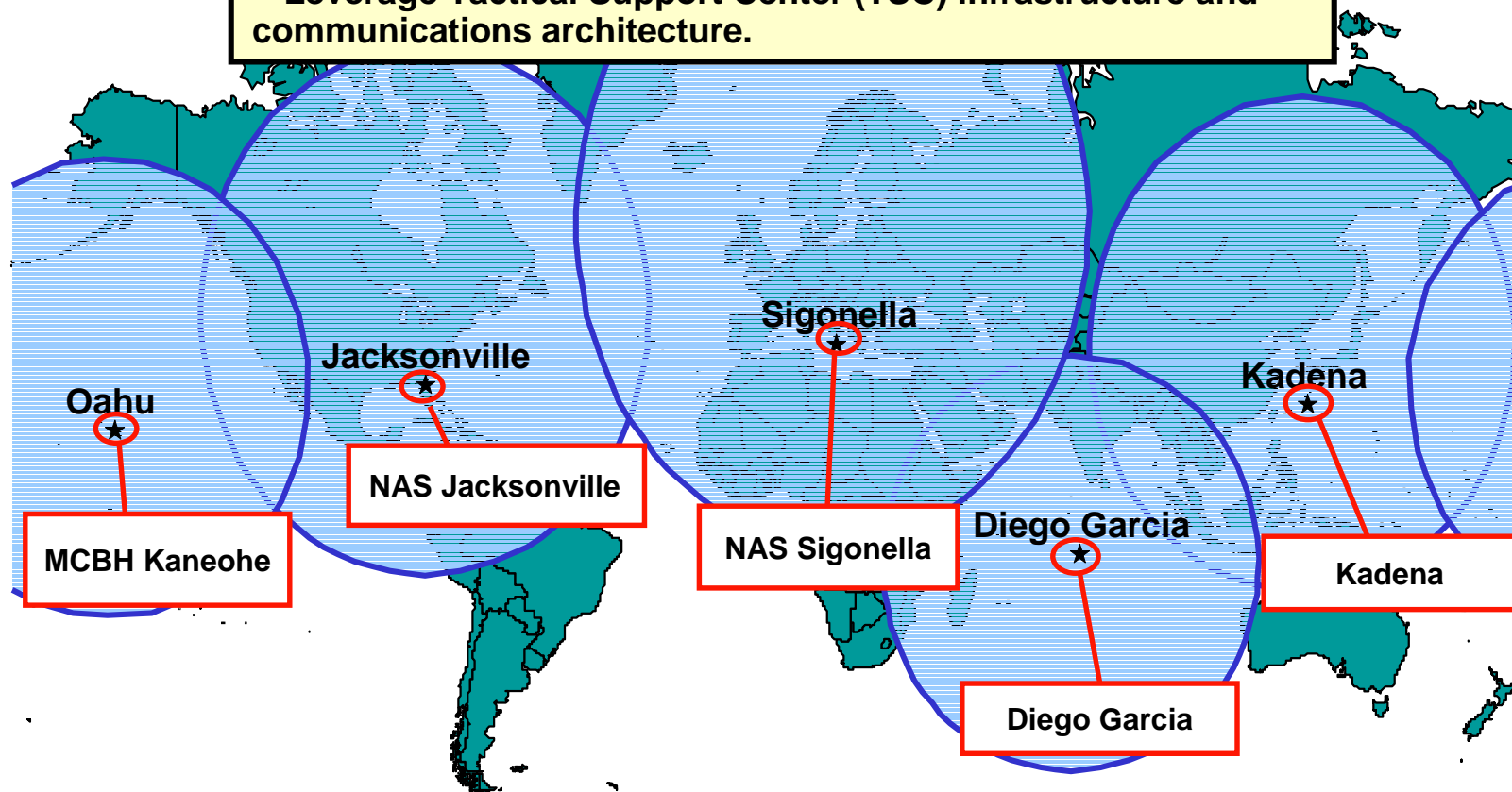2002   2004   2006   2008   2010   2012   2014   2016

Notional BAMS UAV Area Coverage
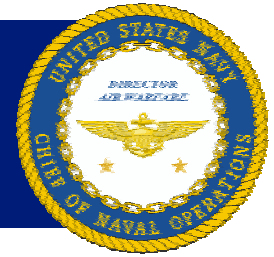
BAMS CONOPS Exploration

- Five locations provide world wide coverage with additional capability to deploy BAMS UAV system from CONUS

- Leverage Tactical Support Center (TSC) infrastructure and communications architecture.
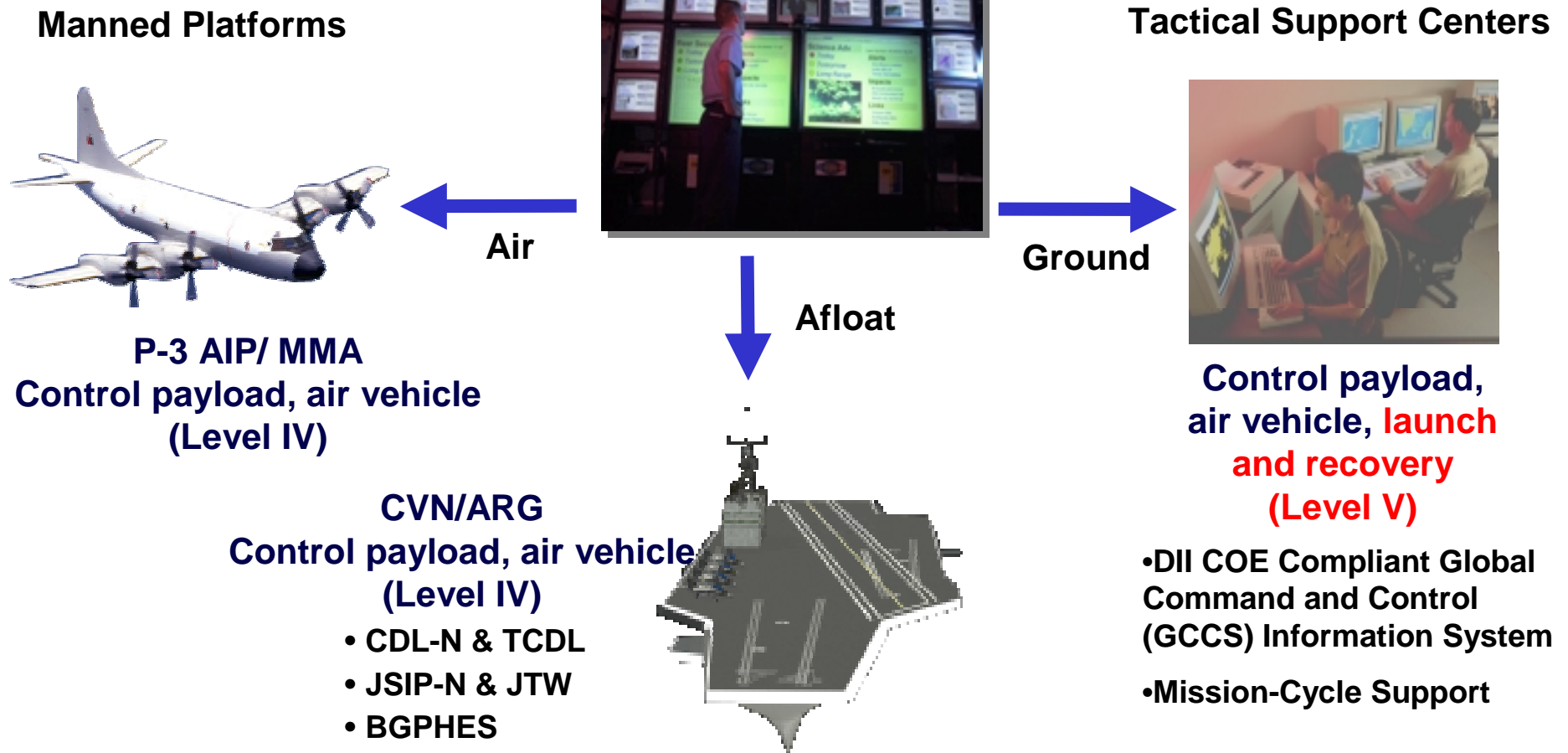
Oahu

Jacksonville

Sigonella

Kadena

Diego Garcia

MCBH Kaneohe

NAS Jacksonville

NAS Sigonella

Diego Garcia

Kadena

BAMS UAV
Air/Afloat/Ground Integration

**Naval Fires Network (NFN) /
Tactical Control System (TCS)**

Manned Platforms

Tactical Support Centers

Air

Ground

**P-3 AIP/ MMA
Control payload, air vehicle
(Level IV)**

Afloat

**CVN/ARG
Control payload, air vehicle
(Level IV)**

- CDL-N & TCDL
- JSIP-N & JTW
- BGPHES

**Control payload,
air vehicle, launch
and recovery
(Level V)**

- DII COE Compliant Global Command and Control (GCCS) Information System

- Mission-Cycle Support

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GHMD and BAMS UAV Programs

- **Global Hawk Maritime Demonstration (formerly Phase I)**
  - Procures one system (2 Vehicles w/Ground Control Station, 2 Launch Recovery Element, support equip)
  - Available for CONOPS development, experimentation, culture building, and training
  - Experiment with alternate sensors
  - Study the integration of TCS into Tactical Support Center (TSC) and CVs/Big Decks
    - Sight survey ongoing for initial development
    - Procure in FY03, deliver in FY05

- **BAMS UAV (formerly Phase II)**
  - IOC FY08, FOC FY14
  - Milestone B is 1st Qtr FY04

GHMD and BAMS UAV Ongoing Events
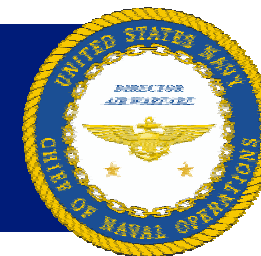
- **GHMD**
  - **Sight Assessment**
    - One of the following:
      - Pax River
      - Pt Mugu
      - China Lake
    - No show stoppers
    - Criteria still being identified
    - Report Due OCT 02
- **BAMS UAV**
  - **Requirements documentation preparation underway**
    - Apr 03 Analysis of Alternatives (AoA)
    - Nov 02 CONOPS
    - Oct 03 C4I Support Plan
    - May 03 Operational Requirements Document (ORD)
  - **Fleet User Teams (FUT) -** Supports AoA
    - Three meetings
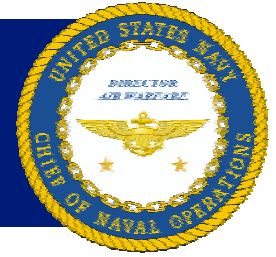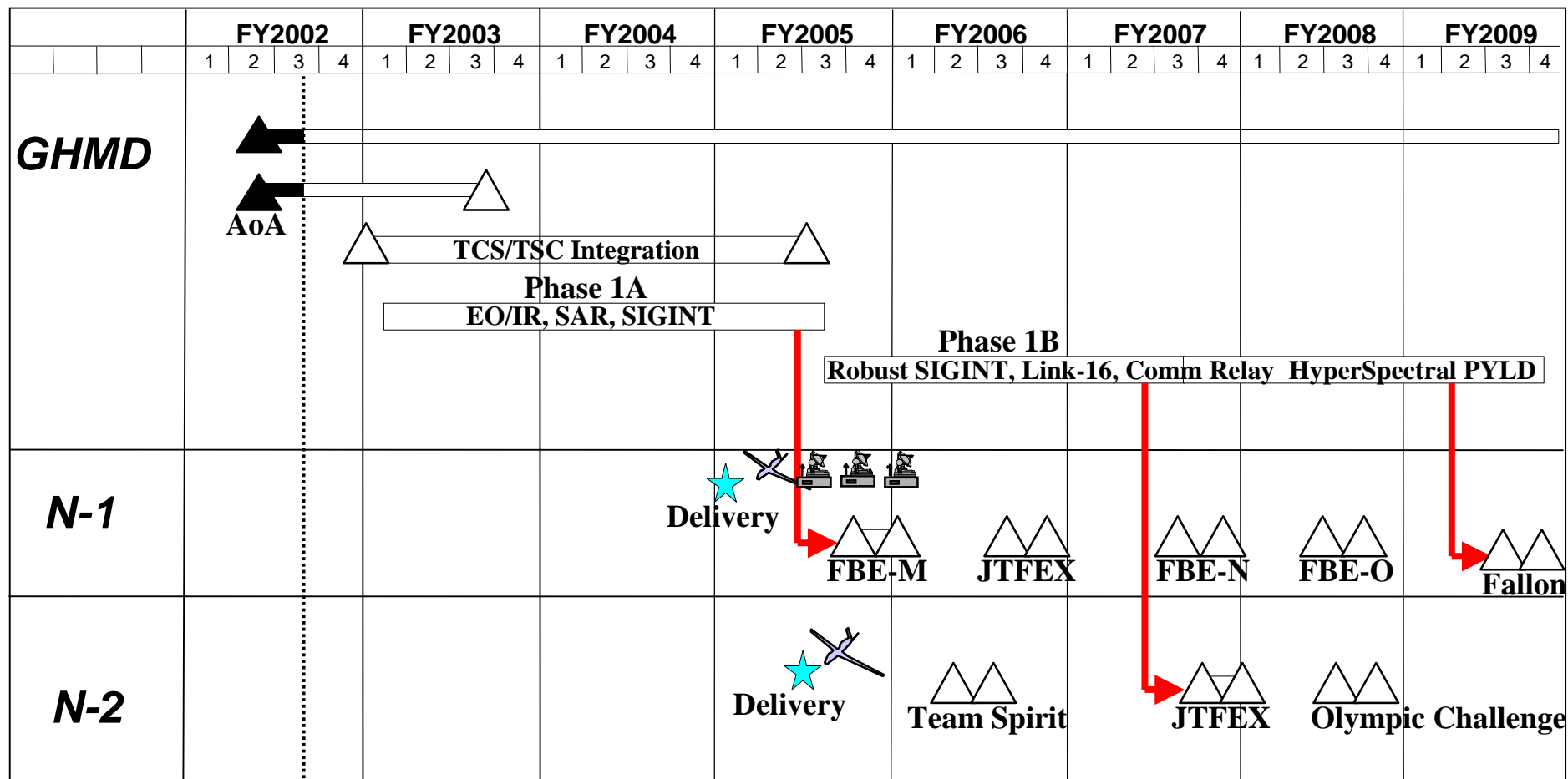
- **Bandwidth**
  - LOS and BLOS way ahead?

- **Air/Afloat/Ground C4I-C2 Architecture**
  - Unique issues to USN

- **Fast Moving Train**
  - Parallel efforts

- **Requirements creep**
  - Everyone's "truck"

- **Manpower CONOPS**
  - In addition to "Ops" CONOPS

GHMD Schedule

BAMS UAV Schedule

	FY2002				FY2003				FY2004				FY2005				FY2006				FY2007				FY2008				FY2009			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4

Key Milestones
AoA Complete — MS B — PAC — IPR — MS C — DT/OA — PRR — OTRR — IOT&E — IOC

Source Selection
DRFP — RFP — SS — ★ Award

EMD
IDR — FDR — Hardware Dev.

LRIP
LRIP 1 QTY=2 — LL — LRIP 2 QTY=2

Production
LL — FRP 1

GHMD Sked

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